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UNITED STATES DEPARTMENT OF AGRICULTURE

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

FOREST INSECT INVESTIGATIONS

Project h-1-22 Date Author

SUBJECT—

TITLE

PINE BEETLE SURVEY OF 1944

on the

MALHEUR NATIONAL FOREST

by

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Scientific Aid

Forest Insect Laboratory
Portland 5, Oregon
December 7, 1944

INDEX NO.—

U.S. GOVERNMENT PRINTING OFFICE 8—9743

U. S. Department of Agriculture
Bureau of Entomology and Plant Quarantine
Forest Insect Investigations

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on the
MALHEUR NATIONAL FOREST

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December 7, 1944

PINE BEETLE SURVEY OF 1944
on the
MALHEUR NATIONAL FOREST

The fourteenth annual pine beetle survey on the Malheur National Forest was conducted during the period September 29 to October 9, inclusive. Again this year, the project was undertaken cooperatively by the Forest Service and the Bureau of Entomology and Plant Quarantine. In addition to providing funds and one crew member, Harald Eriksson, the Forest Service made all the necessary arrangements for obtaining subsistence supplies for the survey crew. Bureau members who participated in the field work were W. J. Buckhorn, R. L. Furniss and J. M. Whiteside.

Nine 320-acre plots were recruised. All pine losses that had developed on these plots since the 1943 survey were recorded. Although no comprehensive reconnaissance was undertaken, a fairly good idea of general conditions on much of the Forest was obtained while traveling to and from the plots. A trip was made into the Deer Creek drainage of Flagtail Unit to investigate group killing in residual stands in the wake of recent logging operations.

Losses on Plots- 1943.

Plot data indicate that pine beetle infestation declined in 1943 to the lowest level since the surveys were begun in 1931. Losses on the nine plots averaged 29 board feet per acre or .20 percent of the stand. These losses, which are 52 percent lower than the average for 1942, are considerably less than the estimated rate of annual growth.

Losses on Plots - 1944.

From experience in the past it is probable that about 69 percent of the 1944 loss was recorded on the recent survey. On this basis, estimates of the probable total seasonal loss have been prepared and are included in the accompanying table. These estimates indicate that losses were some 50 percent greater than in 1943 and approximated the level of 1942. On the plots, estimated losses in 1944 averaged 58 board feet per acre or .41 percent of the stand.

General Losses - 1943 and 1944.

Insufficient information is available for preparation of estimates of losses by areas, but general observations indicated that losses throughout the Forest followed a trend similar to that on the plots.

Special Features of 1944 Infestation.

One of the most noticeable features of the 1944 infestation was a change in brood conditions. In 1942 and 1943 the so-called "mixed brood" trees were the general rule. More often than not the western pine beetle occurred in mixture with one or more other species. Pure "D.b." trees were

the exception. In contrast, a majority of the trees killed in 1944 were heavily attacked by the western pine beetle unmixed with other species.

Unfavorable climatic conditions, notably a deficiency of moisture, during 1944 resulted in short needle growth, a marked reduction of diameter growth, excessive needle cast, and noticeable flagging of small branches. Consequently, there was an apparent increase of extremely high risk trees encountered on the sample plots. Many of these trees were obviously so weakened that only a few beetles would be necessary to overcome them. That mortality remained relatively low is attributed largely to the fact that the beetle population had not yet increased sufficiently to attack all the favorable host material. All signs point to 1944 as being the turning point in the trend of infestation which has been declining since 1938.

Losses on Deer Creek Sale Area.

Losses following logging in 1943 and 1944 in Deer Creek drainage of the Flagtail unit have been excessive. In 1944 losses for the entire drainage probably averaged around 60 trees per section and on certain areas may have run well over 100 trees per section. Such losses are high even for virgin stands but are relatively more important in cutover stands where the reserve trees have been specifically chosen for survival.

Stands of the Deer Creek drainage are of the lower fringe type and in the past have suffered some of the heaviest losses on the Forest. Recent losses have continued above normal even though losses for the forest as a whole have been relatively light. Obviously these stands are in rather delicate balance with their environment; hence, it is to be expected that the disturbances incident to logging would cause increased beetle activity during the immediate post-logging period. No doubt the drought conditions of 1944 also contributed to the loss that did occur.

Examination revealed that many of the larger groups (6 to 8 trees in a group) were along logging roads, borrow pits, and skid trails where roots had been exposed or where trees had suffered abrasions during logging. Apparently infestation developed in these highly susceptible trees and then spread to nearby uninjured trees.

Should conditions for tree growth improve within the next year or two, the infestation in Deer Creek drainage will probably subside with the diminishing effects of logging. However, if conditions similar to or worse than those of 1944 continue, these stands should be closely watched least a critical situation develop.

It is believed that a considerable reduction in losses following logging could be effected through increased precautions to avoid injuring reserve trees. A second step that might profitably be undertaken is to remove all seriously injured trees in order to reduce the amount of highly susceptible material remaining after logging.

Ponderosa Pine killed by bark beetles on virgin check plots
Malheur National Forest

Area and Plot	Plot Description					1943 Loss					1944 Loss				
	T	R	Sec.	Pine Timber Acres	Pine Volume B. M.	No. trees	Volume B.M.	BM Per Acre	% of Stand	Ratio to 1942	Trees Actually Marked	Est. of probable total for Season No. Trees	Volume B.M.	BM per Acre	% of Stand	Ratio to 1943
John Day															
Long Cr.	10S	28E	24 S½	320	2,920	2	1,580	5	.05	.79	3	5	5,270	16	.18	3.33
Rudio Mtn.	11S	28E	26 W½	245	3,060	7	8,890	36	.29	1.64	4	6	4,790	20	.16	.54
Beech Cr.	12S	31E	25 N½	313	2,380	26	17,910	57	.75	.70	32	51	30,340	96	1.27	1.69
Area Total				878	8,360	35	28,380	32	.34	.86	39	62	40,400	46	.48	1.43
Snow Mtn.																
Sawtooth	19S	28E	15 E½	320	4,950	10	6,690	21	.14	.34	24	35	20,410	64	.41	3.05
Malheur River																
Bridge Cr.	17S	32E	36 W½	320	4,680	11	9,110	28	.19	1.32	8	12	8,730	27	.19	.96
Williams Ranch	20S	32E	30 W½	320	4,750	21	11,230	35	.24	.39	17	25	17,520	55	.37	1.56
Mahogany Spr.	17S	33½E	28 E½	320	3,670	15	6,690	21	.18	.35	19	28	20,180	63	.55	3.01
Summit Cr.	17S	35E	29 E½	320	4,350	9	4,850	15	.11	.21	9	14	15,390	48	.35	3.17
Crane Prairie	16S	35E	10 W½	320	8,360	10	13,100	41	.16	.36	19	29	38,780	121	.46	2.95
Area Total				1600	25,810	66	44,980	28	.17	.40	72	108	100,600	63	.39	2.25
FOREST TOTAL - 9 PLOTS				2798	39,120	111	80,050	29	.20	.48	135	205	161,410	58	.41	2.01